New Eagle

CONTROL SYSTEM SOLUTIONS

Raptor-Telematics

User Manual

Last Updated: 4/24/2015

Contents

1. Introduction 3
2. Hardware 4
   2.1 C4Max 4
3. Software / Capabilities 5
   3.1 CAN Logging and Remote Diagnostics 5
   3.2 Remote Reflash 5
4. Using The Back-End 6
   4.1 Login / Home Screen 6
   4.2 TCM Index 7
   4.3 Vehicle Templates 7
   4.4 View Vehicles 7
      4.4.1 Create a Vehicle 7
      4.4.2 Vehicle List 8
      4.4.3 Engineering Data Screen 8
      4.4.4 Update Screen 9
      4.4.5 Last Data Set 10
      4.4.6 Active Fault Page 11

1. Introduction

The Raptor®-Telematics solution enables remote tracking and management of assets through GPS and cellular data technology. This system serves as gateway for remote administration of vehicles and data analysis. The New Eagle telematics platform can monitor and analyze driver behavior, measure fuel consumption, and detect maintenance issues with vehicles before they become a problem. The seamless integration between the Telematics Control Module (TCM) and New Eagle ECUs also allows the option for remote calibration, reflashing of the ECU, and fault reporting. The TCM is a standalone unit that can perform a multitude of functions from CAN data aggregation and analytic processing to real-time vehicle monitoring through available Cell networks. It can communicate desired parameter information to a web-based portal.

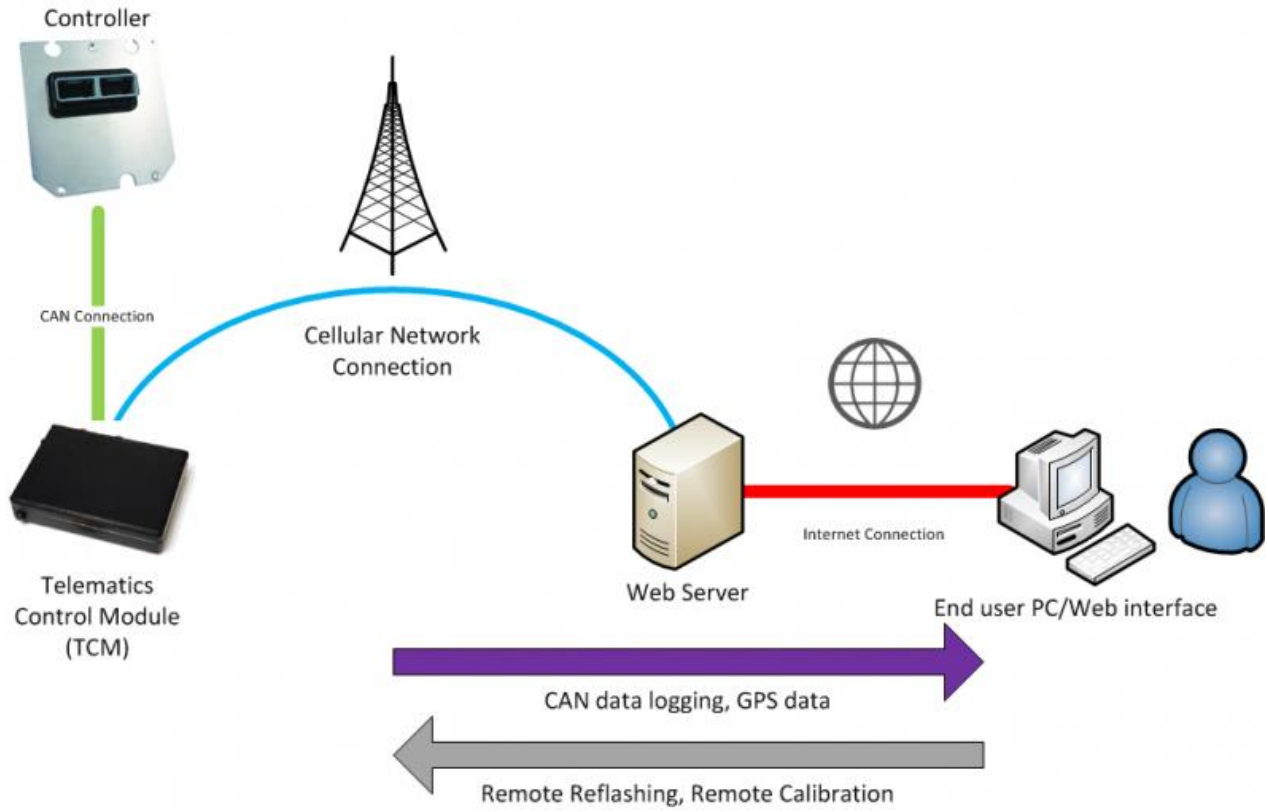


Figure 1 - Telematics Data Flow Infographic

2. Hardware

Raptor-Telematics uses C4Max hardware from Mobile Devices for TCM hardware. Other hardware options may be available at a later date.

2.1 C4Max

The C4Max is a compact telematics hardware component suitable for rugged industrial and automotive environments. The hardware has GPS receiving capabilities, CAN communication ports, and GSM data capabilities for communication over cellular networks to web servers. Hardware specifications are below:

Hardware Specifications	
Processor	ARM 11 – 500 MHz
RAM	64 Mbytes
Flash	256 Mbytes
GPS Receiver	Sirf Atlas V
Modem	Quad-band GSM/GPRS modem
GSM and GPS Attenas	External Fakra antennas
LEDs	2 (1 software controllable)
Power Supply	8-32V
Connectors	20 pin microFIT
Operating Temperature	-25/70 °C
Dimensions	88x54x17 (mm)

Figure 2 - Hardware Specifications

Signal	Pin	Colour
DIG_OUT1	1	Purple
DIG_OUT2	2	Blue
J1708 (RS485 A)	3	White with black
J1708 (RS485 B)	4	Red with black
IN3 / TACHO DATA	5	Green
RS232_CTS1	6	Blue with black
RS232_RXD2	7	Green with black
RS232_RTS1	8	Grey with black
ONE_WIRE	9	Grey
AN_IN1	10	Brown
VBAT	11	Red
GND	12	Black
CANL	13	Yellow with black
CANH	14	Purple with black
IGNITION	15	White
ALARM	16	Orange
RS232_RXD1	17	Orange with black
RS232_TXD1	18	Brown with black
RS232_TXD2	19	Black with white
AN_IN2	20	Yellow

20	19	18	17	16	15	14	13	12	11
10	9	8	7	6	5	4	3	2	1

Figure 3 - C4Max Pinout

3. Software / Capabilities

Raptor-Telematics units come with built-in application software which can be configured from the back-end web portal. Source code for the modules is not made available. The capabilities of the software are described in the following sections.

3.1 CAN Logging and Remote Diagnostics

The TCM has CAN logging capabilities. It can log up to 10 CAN messages, which are configurable through DBC by the fleet manager through the back-end web portal. Data can be logged at 250kbaud, or 500kbaud.

The remote diagnostics feature allows service personnel to monitor the status of deployed vehicles. The ECU broadcasts diagnostic information regarding the health and performance of the vehicle on the CAN bus. This information is logged by the telematics unit and submitted to the Fleet Web Server, where it can be viewed and queried.

Access to near-real-time data on the status and location of deployed vehicles can lead to substantially reduced maintenance costs:

- Malfunctioning equipment can be identified quickly, before a catastrophic failure causes extensive damage to the vehicle.
- Service techs can be dispatched with knowledge of what the problem is, reducing diagnostic time in the field.
- Vehicle performance can be monitored and under-performing vehicles targeted for detailed analysis. This may lead to a recalibration or updates to the ECU software.
- Driver behavior analysis can identify drivers in need of additional training.

3.2 Remote Reflash

Note that Remote Reflash is only available in Telematics Platinum Level

This feature allows the telematics unit to update the ECU without having to recall the vehicle from the field. The ECU has final authority to determine when it is safe for the ECU to be updated (the telematics unit will query the ECU periodically when it has an update operation to perform).

A part of the handshake protocol between the telematics unit and the ECU is a seed-key verification process that ensures that only authorized telematics units can perform an update on the ECU. Further, the reflash packages are signed with a private key, so that no unauthorized updates can performed. This signature is verified by the telematics unit upon download.

4. Using the Back-End

4.1 Login / Home Screen

When you purchased your Telematics Control Module (TCM), you were also given a login for the telematics web portal. Go to telematics.neweagle.net and log in with your provided login credentials. This will take you to the home screen where you will find a summary of the vehicles, TCMs, etc. This is the jumping-off point for everything you can do in the portal.

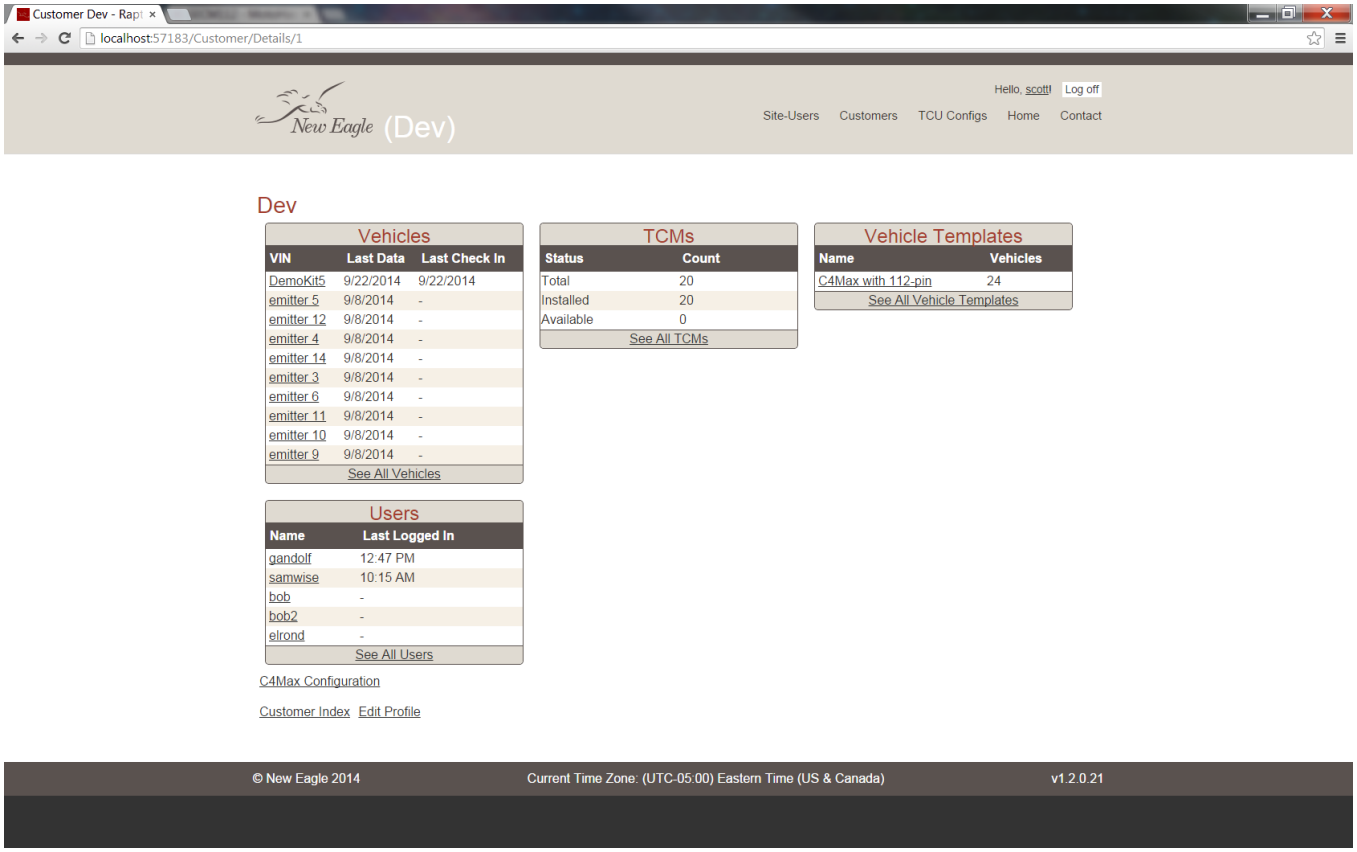


Figure 4 - Telematics Home Screen

4.3 TCM Index

Once you're logged in, go to the TCM index by clicking "See All TCMs". This provides a list of all Telematics hardware provisioned for your project and includes details on hardware and Sim card identification numbers. Check that the TCM you were given matches a TCM listed in the index. The IMEI is listed on the TCM hardware.

4.3.1 Installing a TCM

Before using a TCM, it must be 'installed' from the back-end. This will initialize operation of the communications and capabilities, and configure the TCM hardware with a template that has been created and define the vehicle upon which it is installed. You can add display names and VIN to identify the TCM or TCM's vehicle.

4.4 Vehicle Templates

Go to the Vehicle Template index. You may look at any of the templates to see which data plan is associated with the template. You can configure the data logging capability of your template, and edit other properties of the template's behavior nder Vehicle Templates.

Under the CAN Logging Configuration subheading you can set up your data logging configuration by uploading a DBC file.

To configure other properties of the template to interface with your MotoHawk or Raptor controller, click "Edit" under the TCM Configuration subheading and go to TCM Configuration. Select "C4Max 1.0" from the drop down menu. You may edit the various properties to match your application requirements. The telematics Core properties are related to the protocol for CAN communication with a MotoHawk or Raptor ECU for remote reflash. The Data Logging properties relate to rates and network settings for data logging. If unsure, default properties are a good starting point. Please be aware that changing the reportPeriod and ftsPeriod may affect the amount of data used in a set period of time.

4.5 View Vehicles

Go to the Vehicles index. Your active vehicles will first show up. These are vehicles that have a TCM linked to the vehicle and are set to Active on the web portal. If you click "Show Inactive", you will see inactive vehicles, which are vehicles that are set to Inactive on the web portal. You can also create a new vehicle by clicking "New Vehicle".

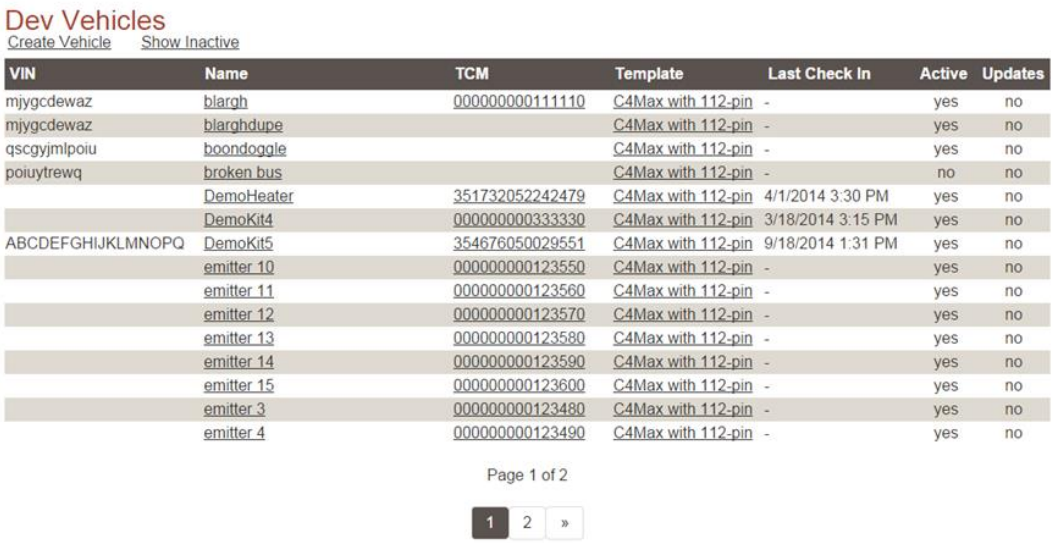
4.5.1 Create a Vehicle

To create a new vehicle, add a display name that will help identify the vehicle. It must be at least one alphanumeric character. You may also add a VIN number, however it is not required. Select the vehicle template that is associated with your data plan. Select the desired TCM from the "Install TCM" dropdown list, then click "Install". Under the Engineering Data tab, go to "Configure Data Logging" and select the desired data logging configuration, which you had created in your Vehicle Template or choose a new DBC file.

By default, the vehicle status will be Active. If the vehicle is inactive, it is advised go to "Edit <Vehicle Name>", uncheck the active box, and then uninstall that TCM in the TCM index.

4.5.2 Vehicle List

This is where you end up when you click the “See All Vehicles” link on the home page. Here you can see all of the vehicles in your fleet and a brief summary of their status. Clicking on a vehicle takes you to a detailed page for that vehicle.



Dev Vehicles

Create Vehicle Show Inactive

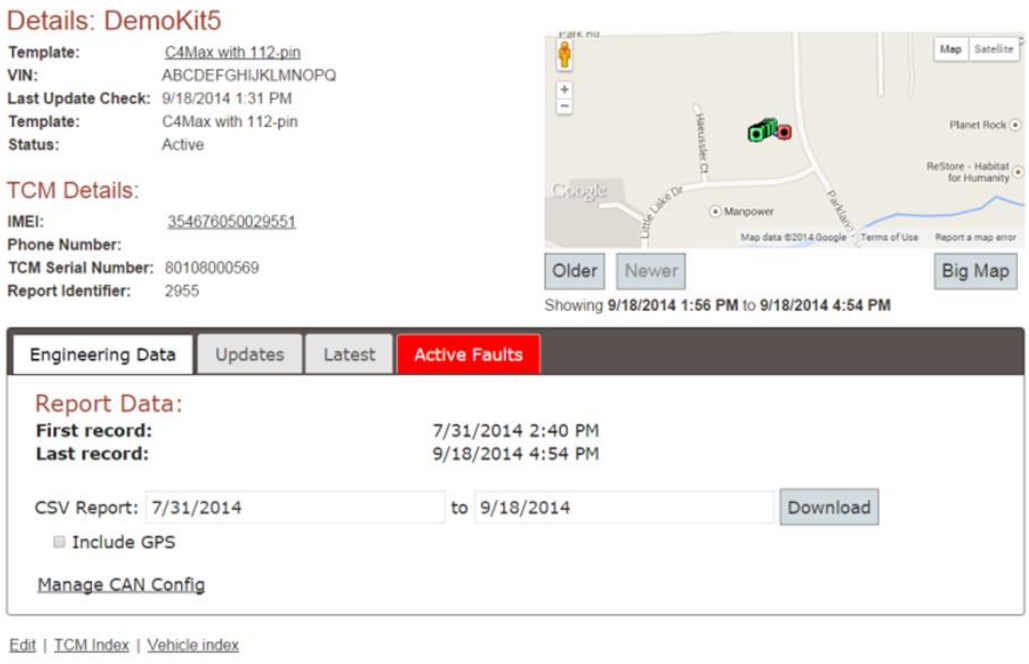
VIN	Name	TCM	Template	Last Check In	Active	Updates
mjygcdewaz	blargh	000000000111110	C4Max with 112-pin	-	yes	no
mjygcdewaz	blarghdupe		C4Max with 112-pin	-	yes	no
qscgyjmlpoiu	boondoggle		C4Max with 112-pin	-	yes	no
poiuytrewq	broken bus		C4Max with 112-pin	-	no	no
	DemoHeater	351732052242479	C4Max with 112-pin	4/1/2014 3:30 PM	yes	no
	DemoKit4	000000000333330	C4Max with 112-pin	3/18/2014 3:15 PM	yes	no
ABCDEFGHIJKLMNOPQ	DemoKit5	354676050029551	C4Max with 112-pin	9/18/2014 1:31 PM	yes	no
	emitter 10	000000000123550	C4Max with 112-pin	-	yes	no
	emitter 11	000000000123560	C4Max with 112-pin	-	yes	no
	emitter 12	000000000123570	C4Max with 112-pin	-	yes	no
	emitter 13	000000000123580	C4Max with 112-pin	-	yes	no
	emitter 14	000000000123590	C4Max with 112-pin	-	yes	no
	emitter 15	000000000123600	C4Max with 112-pin	-	yes	no
	emitter 3	000000000123480	C4Max with 112-pin	-	yes	no
	emitter 4	000000000123490	C4Max with 112-pin	-	yes	no

Page 1 of 2

1 2 »

4.5.3 Engineering Data Screen

By clicking on any of the active vehicles you will be taken to the Engineering Data Screen which has tabs for data logging files, a list of software updates, and active faults. Select a range of data and download into a CSV file. Google map presentation on all tabs for GPS activity.



Details: DemoKit5

Template: C4Max with 112-pin
VIN: ABCDEFGHIJKLMNOPQ
Last Update Check: 9/18/2014 1:31 PM
Template: C4Max with 112-pin
Status: Active

TCM Details:

IMEI: 354676050029551
Phone Number:
TCM Serial Number: 80108000569
Report Identifier: 2955

Map Satellite

Planet Rock

ReStore - Habitat for Humanity

Manpower

Google

Map data ©2014 Google Terms of Use Report a map error

Older Newer Big Map

Showing **9/18/2014 1:56 PM** to **9/18/2014 4:54 PM**

Engineering Data Updates Latest Active Faults

Report Data:

First record: 7/31/2014 2:40 PM
Last record: 9/18/2014 4:54 PM

CSV Report: 7/31/2014 to 9/18/2014 Download

Include GPS

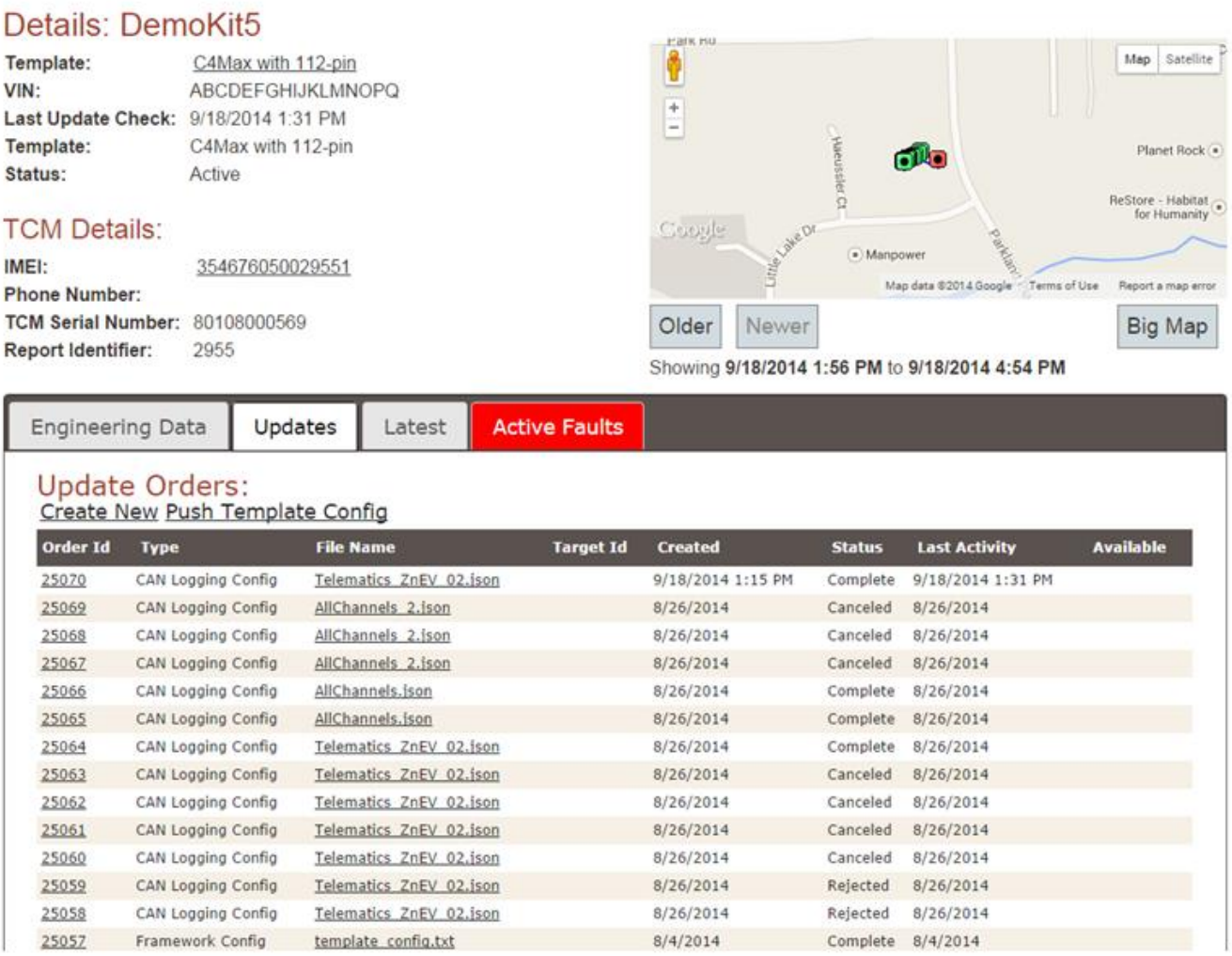
Manage CAN Config

Edit | TCM Index | Vehicle index

In the engineering data screen you can additionally configure the data logging by creating a new configuration based upon a .dbc file.

4.5.4 Update Screen

See a record of the updates to the TCM.



Order Id	Type	File Name	Target Id	Created	Status	Last Activity	Available
25070	CAN Logging Config	Telematics_ZnEV_02.json		9/18/2014 1:15 PM	Complete	9/18/2014 1:31 PM	
25069	CAN Logging Config	AllChannels_2.json		8/26/2014	Canceled	8/26/2014	
25068	CAN Logging Config	AllChannels_2.json		8/26/2014	Canceled	8/26/2014	
25067	CAN Logging Config	AllChannels_2.json		8/26/2014	Canceled	8/26/2014	
25066	CAN Logging Config	AllChannels.json		8/26/2014	Complete	8/26/2014	
25065	CAN Logging Config	AllChannels.json		8/26/2014	Complete	8/26/2014	
25064	CAN Logging Config	Telematics_ZnEV_02.json		8/26/2014	Complete	8/26/2014	
25063	CAN Logging Config	Telematics_ZnEV_02.json		8/26/2014	Canceled	8/26/2014	
25062	CAN Logging Config	Telematics_ZnEV_02.json		8/26/2014	Canceled	8/26/2014	
25061	CAN Logging Config	Telematics_ZnEV_02.json		8/26/2014	Canceled	8/26/2014	
25060	CAN Logging Config	Telematics_ZnEV_02.json		8/26/2014	Canceled	8/26/2014	
25059	CAN Logging Config	Telematics_ZnEV_02.json		8/26/2014	Rejected	8/26/2014	
25058	CAN Logging Config	Telematics_ZnEV_02.json		8/26/2014	Rejected	8/26/2014	
25057	Framework Config	template_config.txt		8/4/2014	Complete	8/4/2014	

4.5.5 Last Data Set

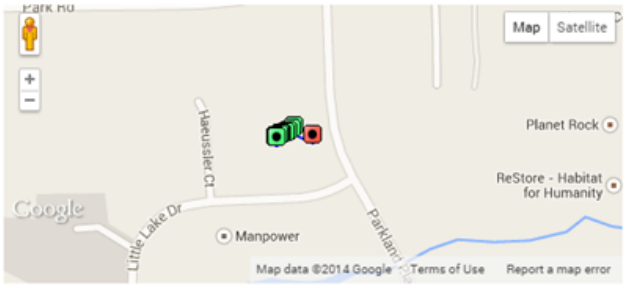
See the last data set recorded from the TCM.

Details: DemoKit5

Template:	C4Max with 112-pin
VIN:	ABCDEFGHIJKLMNOPQ
Last Update Check:	9/18/2014 1:31 PM
Template:	C4Max with 112-pin
Status:	Active

TCM Details:

IMEI:	354676050029551
Phone Number:	
TCM Serial Number:	80108000569
Report Identifier:	2955



Older | Newer | Big Map

Showing **9/18/2014 1:56 PM** to **9/18/2014 4:54 PM**

Engineering Data | Updates | Latest | Active Faults

Latest Report

Refresh

Time:	9/19/2014 12:03 PM
APP:	17 %
Batt_CellVoltMax:	1.22 V
Batt_CellVoltMin:	0.705 V
Batt_CurLimMn:	0.055 A
Batt_CurLimMx:	0.05 A
Batt_HighCellRes:	0.25 mOhm
Batt_HighCellResID:	24 ID
Batt_IsoLvl:	800 Ohms/V
Batt_MaxTmp:	193 C
Batt_NumPopCells:	26 num
Batt_OpenCellID:	23 ID
Batt_PackAmpHours:	22 Ah
Batt_PackCurrent:	-999.55 A
Batt_PackVolt:	1206.14 V
Batt_Res:	0.27 ohms

4.5.6 **Active Fault Page**

A user has the option to configure some messages to be faults that the data server will parse and display when a fault was sent.